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GLYCOANALYSIS PROTOCOLS, 2nd Ed., E. F. Hounsell, ed., Methods in Molecular Biology Series, Volume 76, Humana Press, Totowa, New Jersey, 1998, 262 pp., \$64.50.

This updated and expanded, *Glycoanalysis Protocols*, Second Edition, makes available to all protein scientists, and particularly those working with today's pharmaceuticals, the most advanced and reproducible glycoanalysis techniques currently in use. The book covers the areas of glycoprotein macromolecular structural analysis, oligosaccharide profiling, lipid conjugate characterization, microorganism structure determination, and proteoglycan function. Special attention has been given to advanced analytical techniques in biotechnology during the production of recombinant glycoproteins and other therapeutics.

The editor summarized the contents of the book in the Preface which I found very informative and decided to include parts of it in this review. "The analytical methods covered in *Glycoanalysis Protocols* are the result of experts translating their life's works into easy-to-follow recipes. The important areas covered start with intracellular glycosylation, O-GlcNAc linked to Ser/Thr (of nuclear and cytoplasmic glycoproteins, Chapter 2), with the growing understanding of its relevance to cell regulation and aging processes. Next, proteins destined for transport via intracellular trafficking pathways have oligosaccharide chains linked to Asn (N-linked) that have multiple roles in correct folding expression and tissue distribution of the resulting glycoproteins. Several chapters deal with the structures of these chains and their analyses by high resolution chromatographic methods (HPLC, HPAEC, and HPTLC), which remain the workhorses for purification and characterization (Chapters 1, 5-8).

Now the techniques have come of age and they are available in a rational and user-friendly format. There are also powerful shortcuts to detailed analysis, e.g., the use of lectins, gels, electrophoresis and enzymes, that are now alternative techniques for profiling (Chapters 3 and 4). The mucins and proteoglycans, which are mostly secreted, have predominantly other O-glycosylation patterns (Chapters 9-11). Glycoproteins at the cell surface and in the serum can have both N- and O-glycosylation. This diversity shows altered regulation in cancer, normal cells, and differentiation (Chapter 1). Glycoproteins have distinct oligosaccharide-protein core regions that follow certain rules of nature and can be classified by structure. The more distal glycosylation can be highly diverse and shared by both classes of glycoprotein core and glycolipids (Chapters 12 and 13). These sequences have various functions in specific oligosaccharide recognition. The role of another glycan structure linked to both protein and lipid, the glycan of GPI membrane anchors (Chapter 14), is so far not known, but its presence on diverse proteins and highly regulated biosynthesis is being explored, not least because it is an important feature of prions. The effects of glycosylation on glycoprotein conformation

and function are being studied by methods such as NMR (Chapter 1), and fluorescent energy transfer mechanisms (Chapter 15) are particularly important in the glycosciences. *Glycoanalysis Protocols* covers all the areas noted above, encompassing glycobiology, glycoimmunology, glycopathology, and glycotherapeutics.”

The book is written by experts in their area who tried and succeeded in simplifying the analytical procedures so others can follow. Also, the chapters include recent literature. This is a helpful reference for chemists, biochemists and others who are interested in protein glycosylation. At the current price of \$64.50 it is worth having.

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Haleem J. Issaq, Ph.D.
Editor
The Book Corner

HANDBOOK OF INSTRUMENTAL TECHNIQUES FOR ANALYTICAL CHEMISTRY, F. A. Settle, ed., Prentice Hall PTR, Upper Saddle River, New Jersey, 1997, 993 pp.

This Handbook is a comprehensive reference of analytical instrumentation. This massive 993 page book is made up of eight main sections comprising 51 chapters. It is well written and edited. It is free of errors and well illustrated. The editor (Dr. Frank A. Settle) should be commended on a job well done. I especially like the organization for each technique. The main part of the Handbook consists of seven sections, each addressing a group of related techniques. Techniques in Sections II through VI are organized according to fundamental phenomenon, chromatography, electromagnetic spectroscopies, mass spectrometry, and electrochemistry. The remaining two sections, on surface analysis and macromolecular analysis, include techniques specific to these major areas. Each section opens with an introduction by the section editor, followed by chapters on specific techniques. The identical format of each chapter facilitates comparison and selection of techniques. An introductory summary page assists the reader in deciding whether the technique is applicable to the problem at hand. The organization for each technique is shown in the following outline.

Summary; General Use; Common Applications; Samples; State, Amount, Preparation; Analysis Time; Limitations; Complementary or Related Techniques; Introduction; Brief History; Current Use; How It Works; Physical and Chemical Principles; Instrumentation (Modular Approach);